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REVIEW NOTES ON APPLICATION OF THE MISSILE O&S COST MODEL.(U)
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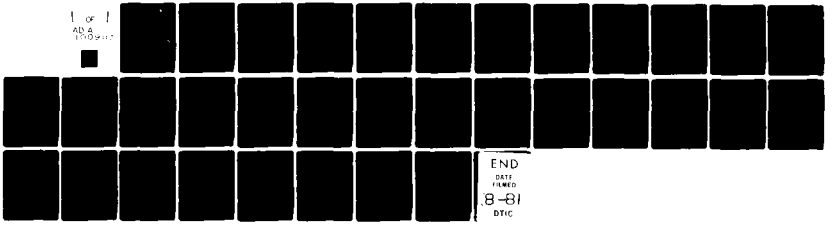

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REVIEW NOTES ON APPLICATION OF THE MISSILE O&S COST MODEL.

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O&S COST ELEMENTS GENERATED BY THE MODEL

O&S COST ELEMENTS

GENERATED BY THE MODEL

	BUDGET APPROPRIATION		
COST ELEMENT	MPN	O&MN	WPN
HANDLING AND INSPECTION	X		
OPERATIONAL TRAINING	X	X	
INTERMEDIATE MAINTENANCE	X	X	
DEPOT MAINTENANCE	X	X	
SUPPLY SUPPORT		X	
SECOND DESTINATION TRANSPORTATION		X	
RECEIPT, SEGREGATION, STORAGE, AND ISSUES (RSSI)		X	
REPLACEMENT TRAINING	X	X	
REPLENISHMENT SPARES			X

O&S COST ELEMENTS

NOT GENERATED BY THE MODEL

	OP-96D ANNUAL ESTIMATE ($K - FY78$)	
FLEET SUPPORT	161	
TECHNICAL SUPPORT	1,521	
MODIFICATIONS	129	
FAMILIARIZATION TRAINING	126	
PERSONNEL SUPPORT	40	
PROGRAM MANAGEMENT	136	
REPLENISHMENT GROUND SUPPORT EQUIPMENT	79	
AIRCRAFT AVIONICS	466	
TOTAL	2,658	$FY78
	2,484	$FY77

BASE CASE INPUTS TO THE O&S COST MODEL

INPUTS TO THE O&S COST MODEL

DEFINITION OF VARIABLE	VARIABLE TYPE	VARIABLE NAME	ILLUSTRATIVE VALUE
Desired Number of organizational units at sea from 1980 to 1986, 1-year intervals	T	TDODOT	0/.5/2/5/7/9/9/9/9
Desired Number of Training Firings from 1980 to 1986, 2-year intervals	T	DUROT	0/0/0/0 per year
Desired Number of Aur's "On Deck: per Organizational Unit	C	NDODO	8 missiles
Switch, 1="Rotation" Policy 0=Fly Until Die	C	SWRO	0
Time "On Deck", when rotated	C	TODO	0.75 years
Tests of AUR's "On Deck"	C	NBIT	252 per tour
Normal Handling Damage Fraction	C	NHD	0.01 per move
Normal Indicated Missile Failure Rate	C	FRN	0.0143 per BIT/ avionics test
Ratio of Indicated Missile Failures to Number of Actual Failures	C	BAFR	1.03
Shelf Life Failure Rate, "On Deck" and Deep Storage from 0 to 4 years, 0.5 year intervals	T T	ASL1OT ASL2OT	0/0/0/.075/.10/.125/.15/.17/.19
Shelf Life Failure Rate, in Reserve from 0 to 10 years, 1-year intervals	T	FSLRT	0/0/.06/.09/.12/.15/.18/.21/.24/.26/.28
Maintenance Due Dates			
Organizational "On Deck"	C	MDODO	0.75 years
Organizational Deep Storage	C	MDDSO	2 years
Reserve Deep Storage	C	MDRES	5 years

INPUTS TO THE O&S COST MODEL

(continued)

DEFINITION OF VARIABLE	VARIABLE TYPE	VARIABLE NAME	ILLUSTRATIVE VALUE
Organizational Storage Capacity (Air Stations and AE's)	C	CAPON	260 missiles
Deep Storage Capacity, per organizational unit	C	NDDSO	70 missiles
Shipment Capacity	C	CAPMN	1E6 missiles per year
Shipment Time, to Fleet	C	FWDTT	0.06 years
IMA Shipping & Handling Delay	C	IMAST	0.04 years
Inventory Coverage (Ratio of Stock to Use Rate), Missile Sections at IMA	C	AUSIT	0.06 years
Time to Test at IMA	C	IMATT	0.04 years
Time to Perform Quality Evaluation	C	IMAQT	0.04 years
Time to Disassemble at IMA	C	IMADT	0.04 years
Fraction of Missiles sent to IMA due to BIT/Avionics Indicators which Pass IMA Tests	C	TPFB	.0312
Fraction of Passing BIT/Avionics Missiles which are sent to Quality Evaluation	C	PBFQE	0.07
Ratio of Actual Missile Failures to Number of Indicated Failures among Fleet Returns	C	ATFR	0.96
Fraction of Passing Fleet Returns which are sent to Quality Evaluation	C	PSFQE	0.07
Labor Requirements per Missile At IMA			
Assembly	C	M1	20 manhours
Testing	C	M2	30 manhours
Disassembly	C	M3	20 manhours

INPUTS TO THE O&S COST MODEL
(continued)

DEFINITION OF VARIABLE	VARIABLE TYPE	VARIABLE NAME	ILLUSTRATIVE VALUE
Average Available Consumables Delay, IMA & Depot	C C	AVDTI AVDTD	0.04 years 0.04 years
Fraction Consumables Available	C	CSAV	0.85
Unavailable Consumables Delay, IMA & Depot	C C	CXDTI CXDTD	0.25 years 0.25 years
Shipment Time, to Depot	C	REARTT	0.06 years
Section and Reparables Repair Times, at Depot	C C	SREPT PREPT	0.06 years 0.06 years
Inventory Coverage (Ratio of Stock to Use Rate), Reparables at Depot	C	PCOVT	0.06 years
Needed Reparables per Section	C	NPS	1.5
Fraction of Reparables Not Economically Repairable	C	FPX	0.10
Labor Requirements at Depot			
Section Repair	C	M4	35 manhours
Reparables Repair	C	M5	35 manhours
Available Reparables Delay	C	PACCT	0.06 years
Fraction Reparables Available	C	PSAV	0.85
Unavailable Reparables Delay	C	PXDTD	0.25 years
O&S COST FACTORS			
Cost per Enlisted Man	C	CPEM	9.5E3 $ per year
Cost Per Officer	C	CPOF	22.1E3 $ per year
Handling Manpower per Unit	C	HMMNO	1.2 men
Manpower Turnover Time	C	HMMTO	2.5 years
Cost per Training Firing	C	CURUO	5E3 $
Fraction of Firing Costs to O&MN	C	FC20	0.8

INPUTS TO THE O&S COST MODEL
(continued)

DEFINITION OF VARIABLE	VARIABLE TYPE	VARIABLE NAME	ILLUSTRATIVE VALUE
Fraction of Military Personnel	C	MPFI	0
At IMA & Depot	C	MPFD	0
Labor Cost at IMA	C	CPMH	12 $ per manhour
at Depot	C	CPSMH	16 $ per manhour
Overhead Rates at IMA	C	C4OR	1.2
& Depot	C	C6OR	2
Consumables Usage per Missile In:			
Assembly	C	CON1	50 $
Testing	C	CON2	50 $
Disassembly	C	CON3	50 $
Missile Section Repair	C	CON4	100 $
Reparables Repair	C	CON5	100 $
Fraction of Supply Support Costs on Value of Consumables &	C	C7CR	.15
Reparables	C	C7PR	.15
Containerized Missile Weight	C	AVMWT	0.6 tons
Containerized Section Weight	C	AVSWT	0.07 tons
Transportation Costs (CONUS)	C	CPMILE	0.10 $ per ton-mile
Overseas Transport Costs	C	CPMOS	0.10 $ per ton-mile
Distance Shipped (CONUS)	C	AVRD	1500 miles
Overseas Distance Shipped	C	AVOSD	5000 miles
RSSI Costs	C	CPRND	72 $ per ton
Time to Train EM's	C	TTEM	0.34 years
Cost to Train EM's, Other than Pay	C	C16EM	520 $
Number of Major Reparables per Missile	C	NPAUR	37
Average Missile Unit Cost	C	CAC	93E3 $
Ratio of Spares Cost to Missile Unit Cost	T	AUNCMT	2/2/2/2/2/2/2/2

INPUTS TO THE O&S COST MODEL

(continued)

PROCUREMENT/DELIVERY INPUTS

DEFINITION OF VARIABLE	VARIABLE TYPE*	VARIABLE NAME	ILLUSTRATIVE VALUE
Pilot Production Time Span	C	PIT	1 year
Number in Pilot Lot	C	PIN	130 missiles
Number of Plot Models Used for T&E	C	RDPIN	50
Production Initiation Time	C	PRITN	1980
Full-Scale Production Time Span	C	PRTT	7 years
First-year (Pilot) Production Lot	C	NUM1T	130 missiles
Total Full-Scale Production Lot	C	NUMT	6600 missiles
Fraction of Full-Scale Lot In:			
Year 1	C	NUM1F	0
Year 2	C	NUM2F	0.1
Year 3	C	NUM3F	0.17
Year 4	C	NUM4F	0.14
Year 5	C	NUM5F	0.16
Year 6	C	NUM6F	0.16
Year 7	C	NUM7F	0.16
Year 8	C	NUM8F	0.16
Fraction Cut Back in Stretch-Out	C	PRVDV	0
Date of Initial Cutback	C	PRVDTT	2000
Time Span of Cutback	C	PRDEL	0 years
Initial Delivery Delay	C	PROCD	.25 year
Start of Simulation	C	TIMEN	1980

ASSUMPTIONS UNDERLYING THE O&S COST ESTIMATES

I. DIRECT O&S COST ELEMENTS

1.1 Handling & Inspection -- at full deployment, the missiles are scheduled to be deployed on 12 ships. Each ship has 4 enlisted men who handle and inspect all the missiles carried, and each man costs $9,500 per year. It is assumed that 30% of the total missile handling and inspection workload is allocated to this particular missile.

1.2 Operational Training -- there are no operational training firings of this missile. However, 22 pilots per ship are given time on the missile trainer twice per year. The trainer costs $800 per hour, and can handle 1.3 pilots per hour.

1.3 Intermediate Maintenance -- depends on the IMA workload (see below) and the costs per missile processed. The cost per missile is a function of the manhours required per missile (30 manhours to test a 'good' round, and 20 + 20, or 40, to disassemble and reassemble, including testing, a 'bad' round) and the cost per manhour ($12). There is also an IMA overhead rate of 120% and a charge for consumable materials use. For this missile, the model calculates these costs to add up to about $1180 per missile ($1260 if RSSI is included).

1.4 Depot Maintenance -- depends on the depot workload (see below) and the cost per section repaired. The cost per section is a function of the manhours required per section (35 manhours), and per repairable part (also 35 manhours). It is assumed that there are 1.5 malfunctioning parts per section, but that 10% of these are not economically repairable. The cost per manhour is $16, there is an overhead charge of 200% and $100 of consumable materials are

used per repair (sections and repairable parts). The model calculates these costs to total about $4,180 per section.

1.5 Supply Support -- a charge of 15% of the value of the consumable materials and replenishment spares used at the IMA and depot is levied to cover the costs of purchasing, sorting, managing, distributing, etc., those materials.

1.6 Quality Evaluation -- The costs of quality assurance at the WQEC are assumed to be included in the costs of intermediate maintenance.

1.7 Transportation -- these costs are charged to the transhipment of missile sections between the IMA and depot, and the shipment of 'down' rounds from the fleet overseas to the IMA. For the missile sections, the average distance shipped is 1500 miles, the average containerized weight is 0.07 tons, and the cost per ton-mile is $0.10. When missiles fail or are damaged overseas, they are shipped an average distance of 5000 miles, at a containerized weight of 0.6 tons and a cost of $0.10 per ton-mile.

1.8 RSSI (Receipt, Storage, Segregation & Issues) -- a charge of $72 per ton on each containerized missile arriving at or leaving the IMA.

1.9 Replacement Training -- missile handling and inspection personnel completely turn over every 2.5 years. New personnel must undergo about 17 weeks of training (0.34 years), and their pay is charged to the MPN account. An additional training cost of $520 per man is charged to the O&MN account.

1.10 Replenishment Spares -- replace the 10% of the malfunctioning parts at the depot level which are not economically repairable. There are 37 major parts per missile; each spare part is assumed to cost twice as much as 1/37 of the average missile cost of $93,000, or about $5,000.

II. DISPOSITION OF MISSILES

2.1 RFI (Ready for Issue) --

2.1.1 On Deck -- at full deployment, 9 of the 12 ships are scheduled to be at sea at any one time, on the average (it is assumed that the rotation is a regular one, so that 'average' numbers are truly representative). Each of these 9 ships begins to tour with 8 training rounds "on deck". As these missiles fail or are damaged, they are offloaded for return to the IMA. The number of missiles on deck is not, however, allowed to fall below 4. The model, using the input missile failure and damage rates (see below, "IMA Workload"), calculates that the average number of missiles on deck will be about 5.3 per ship, for a total of about 48.

2.1.2 Deep Storage -- each ship at sea is assumed to have 70 missiles in deep storage. In addition, it is assumed that there will be 100 missiles held in deep storage at Naval Air Stations and 160 held aboard AE's. The total is 890 missiles in deep storage.

2.2 Overseas --

2.2.1 AUR's in Shipment -- replace those missiles which fail or are damaged to prevent the number of AUR's on deck from dipping below 4 for any particular ship. These add up to 34 missiles.

2.2.2 Down Rounds -- are removed from the ships and transported back to the IMA. Since this flow is small, there is a considerable delay while an economic shipping quantity (assumed to be 20 missiles) is assembled overseas. There are 44 missiles in this category.

2.3 CONUS --

2.3.1 AUR's For Shipment -- It is assumed that there is a two-week (0.04 year) delay in shipping AUR's from the IMA. An average, 65 missiles are awaiting shipment.

2.3.2 In Maintenance -- based upon the processing and shipping times at and between the depot and the IMA (basically, 2 weeks or 0.04 years for each step), and the availability of consumables and reparables (85%), the model calculates the number of missiles and missile sections in the maintenance pipeline. In the base case, there are 202 missiles in maintenance (most of these arising from the reserve inventory; see "IMA Workload", below).

2.4 Total in Use --

Sum of missiles RFI, overseas, and in maintenance.

2.5 In Reserve --

All missiles which are not RFI, overseas, or in the maintenance pipeline are held in the reserve inventory.

III. MISSILE MAINTENANCE WORKLOADS

(Full-deployment)

3.1 IMA Workload -- the sum of:

3.1.1 Failed Missiles -- the normal failure rate is 0.0143 per BIT (built-in test), corresponding to a 75% likelihood that a missile will still be operational after 20 flights, assuming one test per flight. On each 9-month (0.75 year) tour of duty, each ship will subject its "on-deck" missiles to 252 tests. An additional 3% of the BIT-indicated missile failures will be false rejects (but still put the missile into the "failed" category).

3.1.2 Damaged Missiles -- there is a 0.01 chance that a missile will be damaged each time it is used.

3.1.3 Training Rounds for Test -- all of the on-deck missiles which have not failed or been damaged in the 9-month tour are sent to the IMA for testing at the end of the tour.

3.1.4 Tactical Rounds for Test -- every 2 years, each missile in deep storage is sent to the IMA when it reaches to maintenance due date. Thus, in the steady state, 1/2 of the missiles in deep storage will be tested each year.

3.1.5 Reserve Rounds for Test -- every 5 years, each missile in reserve storage is sent to the IMA for testing.

3.2 Depot Workload -- the sum of:

3.2.1 Failed Sections (Training) -- are slightly fewer than the number of "failed" training missiles. This is due to the 3% BIT false reject rate. The BIT false rejects are assumed to be properly identified at the IMA. It is

further assumed that there is only one failed section per missile.

3.2.2 Damaged Sections -- it is likewise assumed that there is only one damaged section per damaged missile.

3.2.3 Failed Sections (Tactical) -- due to deterioration on the shelf, 10% of the tactical rounds from deep storage will be found to have a failed section when tested at the IMA. This is based on the two-year maintenance due date interval.

3.2.4 Failed Sections (Reserve) -- Only 15% of the reserve rounds will be found to have a failed section when tested at the IMA. This is based on their five-year maintenance due date interval.

3.2.5 Reparables Repaired (at Depot) -- it is assumed that there will be 1.5 malfunctioning parts per failed or damaged section. However, 10% of these will not be economically repairable, and will have to be replaced by replenishment spares.

MODEL OUTPUTS:

COST ESTIMATES

BASE CASE

ESTIMATE

BASE CASE O&S COSTS

COST ELEMENT	ANNUAL COST ($000 FY77) MPN	O&MN	WPN	TOTAL
HANDLING & INSPECTION	137			137
OPERATIONAL TRAINING		311		311
INTERMEDIATE MAINTENANCE	252	1657		1909
DEPOT MAINTENANCE		1149		1149
SUPPLY SUPPORT		57		57
TRANSPORTATION		28		28
RSSI		140		140
REPLACEMENT TRAINING	19	3		22
REPLENISHMENT SPARES			208	208
SUBTOTALS	408	3345	208	

TOTAL ANNUAL COSTS	$3961
Non-estimated costs (see p.3)	2484
TOTAL O&S COSTS	$6445

BASE CASE

DISPOSITION OF MISSILES

RFI			938	73.1%
	On Deck	48		
	Deep Storage	890		
Overseas			78	6.1%
	AUR's in Shipment	34		
	Down Rounds	44		
	Failures	9		
	For MDD	29		
	Damaged	6		
CONUS			267	20.8%
	AUR's For Shipment	65		
	In Maintenance	202		
	At IMA	158		
	In Sections (to/from IMA/Depot)	44		
Total In Use			1282	100%
Number in Reserve			5330	

BASE CASE

MISSILE MAINTENANCE WORKLOADS

IMA Workload		1620
Failed Missiles	45	
Damaged Missiles	30	
Training Rounds For Test	44	
Tactical Rounds For Test	445	
Reserve Rounds For Test	1056	
Depot Workload		275
Failed Sections (Training)	43	
Damaged Sections	30	
Failed Sections (Tactical)	44	
Failed Sections (Reserve)	158	
Reparables Repaired		371

(1.5 per section, less 10% not economically repairable)

MISSILE DISPOSITIONS, MAINTENANCE WORKLOADS, AND O&S COSTS

Jan. 1, year:	81	82	83	84	85	86	87	88	89	...	94
Missiles RFI	41	392	620	775	925	938	938	938	938		938
Overseas	6	28	55	67	79	77	78	78	78		78
CONUS	12	103	155	206	260	291	324	356	226		267
Total In Use	59	523	830	1048	1264	1306	1340	1372	1242		1282
Reserve	0	46	491	1153	1951	2955	3966	4980	5370		5330
Total Inventory	59	569	1321	2203	3215	4261	5306	6352	6612		6612
Missiles Failed & Damaged	3	14	37	55	72	75	75	75	75		75
In Use Tested	2	66	247	410	434	484	489	489	489		489
Reserve Tested	0	0	10	58	152	286	454	644	836		1056
IMA Wkld.	5	80	294	523	658	845	1018	1208	1400		1620
Depot Wkld.	0	9	47	86	122	153	177	206	235		275
Annual O&S $	80K	325K	948K	1528K	2072K	2488K	2860K	3206K	3463K		3961K
Cumulative $	.04M	.20M	.80M	2.0M	3.8M	6.1M	8.8M	11.8M	15.2M		34.5M

SENSITIVITY ANALYSES

1. IMPROVED RELIABILITY

2. DEGRADED RELIABILITY

3. IMPROVED MAINTAINABILITY

IMPROVED RELIABILITY

For this case, the missile is assumed to achieve higher reliability levels, that is, lower "normal" and shelf-life failure rates. Specifically,

	IMPROVED RELIABILITY	BASE CASE
NORMAL FAILURE RATE	.0099	.0143
DEEP STORAGE FAILURE RATE, AFTER 2 YEARS	.05	.10
RESERVE STORAGE FAILURE RATE, AFTER 5 YEARS	.10	.15

IMPROVED RELIABILITY CASE O&S COSTS

COST ELEMENT	ANNUAL COST ($000 FY77) MPN	O&MN	WPN	BASE CASE TOTAL
HANDLING & INSPECTION	137			137
OPERATIONAL TRAINING		311		311
INTERMEDIATE MAINTENANCE	240	1554		1909
DEPOT MAINTENANCE		784		1149
SUPPLY SUPPORT		43		57
TRANSPORTATION		22		28
RSSI		140		140
REPLACEMENT TRAINING	19	3		22
REPLENISHMENT SPARES			142	208
SUBTOTALS	395	2856	142	
TOTAL ANNUAL COST $3393				$3961

IMPROVED RELIABILITY CASE

DISPOSITION OF MISSILES

RFI			941 (938)	74.8%
	On Deck	51 (48)		
	Deep Storage	890		
Overseas			76 (78)	6.1%
	AUR's in Shipment	33 (34)		
	Down Rounds	43 (44)		
	Failures	7 (9)		
	For MDD	30		
	Damaged	7 (6)		
CONUS			241 (267)	19.1%
	AUR's For Shipment	65		
	In Maintenance	176 (202)		
	At IMA	146 (158)		
	In Sections (to/from IMA/Depot)	30 (44)		
Total In Use			1258 (1282)	100%
Number in Reserve			5354 (5330)	

IMPROVED RELIABILITY CASE

MISSILE MAINTENANCE WORKLOADS

IMA Workload		1618 (1620)
Failed Missiles	31 (45)	
Damaged Missiles	30	
Training Rounds For Test	51	
Tactical Rounds For Test	445	
Reserve Rounds For Test	1061 (1056)	
Depot Workload		187 (275)
Failed Sections (Training)	29 (43)	
Damaged Sections	30	
Failed Sections (Tactical)	22 (44)	
Failed Sections (Reserve)	106 (158)	
Depot Repair Actions		253 (371)
(1.5 per section, less 10% not economically repairable)		

DEGRADED RELIABILITY

For this case, the missile is assumed to have lower reliability, that is, higher "normal" and shelf-life failure rates than in the base case. Specifically,

	DEGRADED RELIABILITY	BASE CASE
NORMAL FAILURE RATE	.0197	.0143
DEEP STORAGE FAILURE RATE, AFTER 2 YEARS	.20	.10
RESERVE STORAGE FAILURE RATE, AFTER 5 YEARS	.225	.15

DEGRADED RELIABILITY
CASE O&S COSTS

COST ELEMENT	ANNUAL COST ($000 FY77) MPN	O&MN	WPN	BASE CASE TOTAL
HANDLING & INSPECTION	137			137
OPERATIONAL TRAINING		311		311
INTERMEDIATE MAINTENANCE	273	1818		1909
DEPOT MAINTENANCE		1725		1149
SUPPLY SUPPORT		80		57
TRANSPORTATION		36		28
RSSI		140		140
REPLACEMENT TRAINING	19	3		22
REPLENISHMENT SPARES			312	208
SUBTOTALS	428	4114	312	
TOTAL ANNUAL COST $4854				$3961

DEGRADED RELIABILITY CASE

MISSILE MAINTENANCE WORKLOADS

IMA Workload		1623 (1620)
Failed Missiles	61 (45)	
Damaged Missiles	30	
Training Rounds for Test	38 (44)	
Tactical Rounds for Test	445	
Reserve Rounds for Test	1048 (1056)	
Depot Workload		412 (275)
Failed Sections (Training)	57 (43)	
Damaged Sections	30	
Failed Sections (Tactical)	89 (44)	
Failed Sections (Reserve)	236 (158)	
Depot Repair Actions		557 (371)
(1.5 per section, less 10% not economically repairable)		

DEGRADED RELIABILITY CASE

DISPOSITION OF MISSILES

RFI		936 (938)	70.7%
On Deck	46 (48)		
Deep Storage	890		
Overseas		78 (78)	6.0%
AUR's in Shipment	34		
Down Rounds	44		
Failures	10 (9)		
For MDD	29		
Damaged	5 (6)		
CONUS		309 (267)	23.3%
AUR's For Shipment	65		
In Maintenance	244 (202)		
At IMA	178 (158)		
In Sections (to/from IMA/Depot)	66 (44)		
Total In Use		1323 (1282)	100%
Number in Reserve		5289 (5330)	

IMPROVED MAINTAINABILITY

For this case, the missile is assumed to require fewer man-hours per maintenance action than in the base case. Specifically,

		IMPROVED MAINTAINABILITY	BASE CASE
IMA MAN-HOURS PER MISSILE (reduced 15%)	M1	17	20
	M2	25.5	30
	M3	17	20
DEPOT MAN-HOURS PER SECTION (reduced 35%)	M4	22.75	35
	M5	22.75	35

The lower man-hour requirements reduce the IMA unit cost from $1180 to $1020 and the depot unit cost from $4180 to $2800.

IMPROVED MAINTAINABILITY CASE O&S COSTS

COST ELEMENT	ANNUAL COST ($000 FY77) MPN	O&MN	WPN	BASE CASE TOTAL
HANDLING & INSPECTION	137			137
OPERATIONAL TRAINING		311		311
INTERMEDIATE MAINTENANCE	220	1424		1909
DEPOT MAINTENANCE		770		1149
SUPPLY SUPPORT		57		57
TRANSPORTATION		28		28
RSSI		140		140
REPLACEMENT TRAINING	19	3		22
REPLENISHMENT SPARES			208	208
SUBTOTALS	376	2733	208	
TOTAL ANNUAL COST $3317				$3961